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How to Mitigate Private-Label Success in Recessions? A Cross Category Investigation

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HOW TO MITIGATE PRIVATE-LABEL SUCCESS IN RECESSIONS? A CROSS CATEGORY INVESTIGATION

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HOW TO MITIGATE PRIVATE-LABEL SUCCESS IN RECESSIONS? A CROSS CATEGORY INVESTIGATION

Abstract

This study investigates whether managerial practice in correspondence with the business cycle is partly responsible for the intensified popularity of private labels in recessionary periods. First of all, the results show that private-label share behaves countercyclically, and that part of the boost in private-label share is permanent. Moreover, most managers seem to adjust their behavior in response to economic downturns by cutting advertising budgets, scaling back innovation activity, and lessening price-promotional activity. More interestingly, this managerial behavior is linked to the cyclical sensitivity in private-label share, which in turn is strongly related to this long-lasting effect of a recession on private-label share. Hence, the dominant practice of reducing brand support in a recession enhances the success of private labels during and beyond the recession.

INTRODUCTION

Over the past few decades, the market share of private labels in most CPG categories has grown considerably, and now accounts for over 20% of global grocery sales (M+M Planet Retail 2004). This continued success has been attributed to a variety of factors, such as a gradual shift in the communication budget from advertising to sales promotions (Hoch, Montgomery and Park 2002), a growing concentration in the retail sector (Hoch and Banerji 1993), a narrowing of the perceived quality gap (Steenkamp and Dekimpe 1997), and the increasing effort retailers put in their private labels (Hoch, 1996).

Recent work by Lamey et al. (2007) has linked private-label success to the economic climate. They studied the aggregate market-share evolution of private labels in four countries (Belgium, United Kingdom, United States and West Germany) over multiple decades, and concluded that the business cycle contributes considerably to the popularity of the store-brand alternative. Private-label share was found to behave countercyclically, i.e. increasing during recessions and decreasing during expansions, while part of the boost in private-label share during recessions was found to be permanent. These findings imply that private labels become increasingly popular during harsh economic times, and leave scars on the performance level of the national brands that remain even when the economy has recovered. The authors subsequently suggested that this phenomenon can be attributed in part to the way managers adjust their marketing spending over the business cycle. Even though one could argue that business-cycle fluctuations are beyond the control of individual managers (indeed, they cannot preclude the *occurrence* of contractions in the economy), it was argued that management's dominant practice of reducing brand support during bad economic times (see in this respect also Srinivasan et al. 2005) is likely to amplify the *impact* of the business cycle in favor of the store-brand alternative. Still, these conjectures were left untested in Lamey et al. (2007). The required marketing support data to do so were not available, and also the small number of private-label series (4) precluded such a formal testing.

The key purpose of this article is to explore whether managerial behavior in response to recessions indeed contributes to the popularity of private labels, not only in the recession itself, but also in subsequent periods. To that extent, we explore whether managers tend to scrutinize their advertising spending and new-product activity when the economy turns sour, and instead boost their promotional action, as suggested by De Chernatony, Knox and Chedgey (1991) and Lamey et al. (2007). Using a large-scale cross-category analysis on a unique database, we subsequently investigate the relative contribution of each of these

managerial responses to private-label success. As such, we extend the study of Lamey et al. (2007) in three important ways.

First, they only analyzed four aggregate (country-level) market-share series. In contrast, we will assess the differential cyclical sensitivity in private-label success across almost 100 different product categories. This offers an opportunity to explore what factors explain the variability (if any) across these categories. Indeed, managers in different sectors may have adopted different strategies to cope with contractions in the economy.

Second, we include direct measures of managerial marketing behavior, and thereby provide a formal test for the (thus far untested) conjectures that (i) managers adjust their behavior in accordance with the state of the economy, and even more importantly, that (ii) this cyclical sensitivity contributes to subsequent private-label success.

Third, the information on the marketing-mix variables is quite detailed, and distinguishes between (i) innovative and less-innovative new products, (ii) different advertising media (television, radio, newspapers and magazines), and (iii) different types of promotional support (temporary price reductions, features and displays). As such, we can study whether innovative products are more (or less) suited to combat private-label growth, what media are most reduced during recessions and whether this is justified, and what promotional strategies one should turn to (or stay away from) to prevent excessive private-label success in recessionary periods.

This article therefore aims to answer the following five research questions:

(i) Does private-label share behave countercyclically?
(ii) Do marketing managers adjust their behavior in response to the business cycle?
(iii) Does the cyclical sensitivity of managerial behavior, if exists, contribute to the cyclical sensitivity of private-label share?
(iv) Do recessions have a long-lasting impact on private-label success?
(v) Do the cyclical sensitivity of private-label share itself and the cyclical sensitivity of managerial behavior contribute to the long-lasting impact of a recession on private-label success?

Questions (i) and (iv) have already been addressed in Lamey et al. (2007), but only at an aggregate level. There is already partial evidence for question (ii) (e.g. Axarloglou 2003; Devinney 1990; Deleersnyder et al. 2008), while the other two research questions, (iii) and (v), have, to the best of our knowledge, not been formally addressed in prior literature.

The remainder of this paper is organized as follows. We begin with a discussion of our unique dataset. Next, we sequentially address each of the above research questions. Finally, we end this study by discussing the overall findings, and present managerial implications and suggestions for future research.

DATA

Our dataset distinguishes itself in its richness along three dimensions: (i) the number of product categories considered, (ii) its long time span, and (iii) information on multiple marketing-support variables. Although each dimension by itself is important, the blend of all three allows us to address in detail the aforementioned research questions. It permits us to link category-level private-label information to three key marketing instruments, in casu promotion, innovation and advertising, for a representative sample of product categories, over a very long time span. In particular, annual time-series information is available for 92 Consumer Packaged Goods (*CPG*) categories sold in the United States. The data cover a wide range of dry grocery (both food and non-food), frozen and refrigerated foods, health and beauty aids, and some general merchandise bought by consumers at grocery stores. An overview of the products in our data set, grouped into broader product fields, is presented in Table 1. Furthermore, our data span over 20 years, ranging from 1985 till 2005. This period is sufficiently long to capture multiple economic cycles, and is comparable in length to other studies on business-cycle activity in both the economic (e.g. Cook 1999; Mills 2001) and marketing (Deleersnyder et al. 2008; Lamey et al. 2007) literature.

Table 1 Data Coverage

Product Fields	Examples	No. of Categories
Assorted foods	Breakfast Food, Rice, Pasta	15
Beverages	Carbonated Beverages, Fruit Drinks, Tea	5
Cakes	Cakes & Pies, Cookies, Crackers	3
Candy	Marshmallows, Popcorn, Salty Snack	5
Canned/bottled foods	Canned Bread, Canned/Bottled Fruit, Canned Vegetables	6
Care products	Feminine Needs, Toilet Tissue, Toothpaste	18
Cleaning products	Bleach, Dishwasher Detergent, Household Cleaner	6
Dairy products	Ice Cream, Yogurt	5
Frozen foods	Pizza, Seafood, Plain Vegetables	15
Pet products	Cat Food, Pet Supplies	3
Taste enhancers	Mayonnaise, Vinegar	9
Miscellaneous	Batteries , Paper Towels	2
Total		92

Private-label-share data are drawn from the Marketing Factbooks, published annually by Information Resources, Inc (IRI). Private-label shares capture the combined share of all retailers' store-brand alternatives, based on volume sales. The Marketing Factbooks information represents an aggregation of the purchases of about 35,000 households, from 26 markets, shopping in 180 different (food) stores. The IRI sample has established itself as representative of national buyer behavior and overall consumer purchasing dynamics. Subsets of these data have been used extensively in the marketing literature (see e.g. Fader and Lodish 1990, Hoch et al. 2002, Lal and Padmanabhan 1995 and Narasimhan, Neslin and Sen 1996, among others). For instance, in the cross-sectional study of Narasimhan et al. (1996), the relationship between a number of product-category characteristics and the average brand promotional elasticity within the category was explored across 108 categories. To the best of our knowledge, only Lal and Padmanabhan (1995) and Hoch et al. (2002) conducted a longitudinal study. The former investigated the long-run relationship between market share at the brand level and promotional expenditures, using data that span a decade (1983-1992), and which covered 91 product categories. Hoch et al. (2002), in turn, studied determinants of private-label growth using 225 categories for the period 1987-1994. However, they did not consider the state of the economy as a possible driver. As indicated before, in the current study we focus on 92 product categories, which is in the same order of magnitude as Lal and Padmanabhan (1995) and Narasimhan et al. (1996). Even though the Marketing Factbooks report more categories, our subset is based on the intersection with several other data sources (as discussed below). Moreover, due to missing data in the Factbooks, especially for the years 1995-1997, we were unable to extract consistent and uninterrupted private-label-share series for several other categories.

Besides our focal variable, private-label share, information on managers' key marketing practice over time is obtained from several sources, resulting in information on each category's annual level of new-product activity, advertising and promotional support. First, yearly data over the same data period on the number of *new products* introduced into the U.S. market are obtained from Productscan©, an online service of Datamonitor. In line with Sorecsu and Spanjol (2008), a distinction is made between (i) innovative (breakthrough) and (ii) less-innovative (incremental) new-product introductions. Productscan© classifies a new product as innovative if it is new on at least one of the following dimensions: new usage – new packaging – new formula – new market – new merchandising and/or new technology. An example of an innovative product along each of these dimensions is given in Table 2.

Whereas in high-tech industries innovations in formulation, packaging, or merchandising would not be considered sufficiently pathbreaking to warrant labeling the product innovative, this does not appear to be the case in CPGs (Sorescu and Spanjal 2008). In this respect, Sorescu and Spanjol state that a merchandising innovation, such as Pringles Prints (potato chips with trivia printed on them), and a formulation innovation, such as DiGiorno Microwave Pizza, which are recognized as the most innovative products in the food industry at the 2005 Spirit of Innovation Awards, adds validity to Productscan's innovativeness classification. We refer to Sorescu and Spanjol (2008) for a more in-depth discussion of the Productscan© database.

Table 2 Innovation Types

Type	***Definition***	***Example***
New Technology	Introducing a new technology to the product	Clear Plan Easy Fertility Monitor, it is the first home ovulation test kit to utilize computer technology to identify fertility status to maximize the chances of conception.
New Formula	Offering additional value through a new formulation	Hain Pure Foods Kitchen Prescription Soup, it is the first soup to offer the benefits of a herbal supplement
New Usage	Positioning the new product to new users or usage	Turtle Wax Odor-X Interior Deodorizer Spray, it is the first fabric odor eliminator designed especially for automotive interiors.
New Market	Opening up a new market for the product	Carbona Dye Magnet, it creates a new market for laundry aids as a sheet that's added to the wash to absorb excess dye and prevent colors from bleeding onto clothing
New Packaging	Providing a consumer benefit with a new packaging	Yoplait Go-Gurt Yogurt, it is packaged in a tube that eliminates the need for a spoon or refrigeration.
New Merchandising	Providing the product with a new merchandising	Home Town Stars Sweetened Toasted Corn Cereal, it adds a local twist to breakfast cereal marketing by featuring pictures of local sports teams on cereal boxes

Next, category-level *advertising* expenditure data are obtained from TNS Media Intelligence, where we distinguish between four media types, namely (i) television, (ii) radio, (iii) newspaper and (iv) magazine advertising. Prior to analysis, all advertising data are

inflation adjusted, using the 2000-constant-prices deflator obtained from the Bureau of Economic Analysis (B.E.A.) of the U.S. Department of Commerce.[1]

Finally, information on category-level *promotional activity* is again obtained from the Marketing Factbooks.[2] IRI distinguishes between (i) in-store display, (ii) print-ad features and (iii) shelf-price reduction (see Narasimhan et al. 1996 and Papatla and Krishnamurthi 1996 for a similar distinction). It expresses the percentage of category volume that was sold under the specified type of promotion. While this reflects consumer usage of different deals instead of how frequently manufacturers offer those deals, Fader and Lodish (1990) argue that there is a strong link between both measures, making the IRI operationalization a good, and well established, proxy for managerial practice. As promotional information for the years 1995 and 1997 was missing, we used the interpolation technique advocated by Harvey and Pierse (1984). Specifically, missing data were interpolated by obtaining a state-space representation for the best fitting ARMA model (based on the AIC), computed with the Kalman filter.

Consumer surveys were used to rate each category in terms of the perceived category performance risk and price-quality inference.[3] This data collection was part of a global study on private-label success, as described in Steenkamp et al. (2005a). In a nutshell, performance risk was estimated through a three-item scale derived from Laurent and Kapferer (1985). The three items asked for each category (i) whether there is much to lose if you make the wrong choice, (ii) whether it matters a lot when you make the wrong choice, and (iii) whether there are large differences in quality between products (Cronbach-α = 0.80). Price-quality inference, in turn, was obtained from the following two items: (i) 'higher priced products offer better quality than lower priced products', and (ii) 'the higher the price, the higher the quality' (Lichtenstein and Burton 1989; Cronbach-α = 0.78).

Finally, data on real U.S. *GDP* is used as a proxy for the general economic activity. Business-cycle fluctuations across many sectors are reflected in aggregate output, making the cyclical component of GDP an appropriate indicator for the overall economic cycle (Stock and Watson 1999). Also other recent studies on business-cycle implications on marketing

[1] www.bea.gov

[2] The IRI Marketing Factbooks for the years 1985-1997, which we obtained through WRDS (Wharton Research Data Services) contain several missing observations. Because of that, promotional information for the years 1995 to 1997 was missing for all 92 categories. Thanks to Peter Fader, we were able to obtain the missing 1996 figures through the hard copy versions.

[3] We refer to section of Research Question 3 for a motivation on the inclusion of these covariates.

have used GDP for a similar purpose (Deleersnyder et al. 2004, 2008). GDP figures, expressed in constant 2000 prices, were obtained from the Bureau of Economic Analysis (B.E.A.) of the U.S. Department of Commerce.

Overall Descriptive Statistics

Private-Label Share. In 2005, the average private-label share across the categories in our sample was 28%, indicating that almost one out of three purchases done at a grocery store went to a private-label alternative. Still, sizeable category differences exist, as outlined in Table 3 and Table 4. Private-label share shows a positive growth pattern in 73% of the categories. On average, this share grew with 3.41% each year[4]; yet again substantial variability in those yearly growth rates is observed (Table 3). These differences in private-label success, both in terms of their level and growth rate, suggest considerable cross-category variation in the private-label environment. This further underlines the importance of moving beyond the aggregate country level in studying private-label sensitivity to the business cycle.

Table 3 Summary Statistics for Private-Label Share

Private-Label Share	1985	1995	2005	Yearly Growth*
Average	0.20	0.22	0.28	0.034
Standard Deviation	0.17	0.18	0.18	0.043

* We removed the short-term fluctuations (based on Equation (1)), when computing the average yearly (long-run) growth

Table 4 Cross-Category Variation in Private-Label Share

Private-Label Share	Category Examples	Private-Label Share in 2005
high	Eggs	78%
	Powdered Milk	52%
	Tomato Products	77%
medium	Instant Potatoes	22%
	Rice	20%
	Salad Dressing	31%
low	Deodorants	1,2%
	Salad Toppings	12%
	Toothpaste	0.5%

New-Product Activity. Our data reveal that more and more new products are introduced in the market place. Across our categories, the total number of new products more than doubled between 1985 and 2005. Still, the proportion of true innovations in the new-product portfolio is declining over time, going from 18.40 % in 1985 to 7.67% in 2005. This

[4] The reported growth figure is expressed in relative terms. For example, if the current private-label share is 20% a growth rate of 3.41% implies an absolute increase of 0.68% to 20.68%.

relative drop is due to a tremendous increase in the number of less-innovative products, combined with a gradual decline in the number of innovative new products. This supports the idea of a declining focus on true innovations as postulated in Winningham (1999). In an average category in our sample, more than 100 new products are introduced in the market in 2005, where only 8 of them are considered true innovations. Still, there exists again substantial cross-category variation, as illustrated in Table 5 and Table 6.

Table 5 Summary Statistics for New-Product Activity

	Less- Innovative		**Innovative**		**Total**	
	Level in 2005	**Yearly growth***	**Level in 2005**	**Yearly growth***	**Level in 2005**	**Yearly growth***
Average	95.71	0.030	5.39	-0.021	101.10	0.025
Standard Deviation	90.55	0.033	4.59	0.033	93.34	0.029

* We removed the short-term fluctuations (based on Equation (1)), when computing the average yearly (long-run) growth

Table 6 Cross-Category Variability in New-Product Activity

		# Less-innovative New Products	
		low*	***high***
# Innovative New Products	***low***	Facial Tissue (0/4) Mayonnaise (0/7) Rice (1/43)	Cooking Sauces (1/214) Popcorn (2/96) Snack Bars/Granola Bars (2/174)
	high	Coffee Creamer (3/ 68) Laundry Detergent (3/51) Toothbrush (6/26)	Ice Cream Cones/Mixes (11/196) Salty Snacks (12/274) Skin Care (14/595)

* Low and high based on a median split. The number of innovative vs. less-innovative new-product introductions in 2005 is reported between brackets.

Advertising. Across all 92 categories, the largest proportion of advertising is typically spent on television (on average 65.87%, based on 2005 figures) and magazines (29.05%), followed by radio (4.41%), with newspapers accounting for the smallest part of the total ad spending (0.67%). Still, the total amount spent on advertising varies considerably between the categories in our sample. For instance, the largest absolute spender in our sample is the category 'Skin Care', which spends twenty-three times more on advertising than a category such as 'Pies & Cakes'. Across our 92 categories, negative yearly growth rates in television and newspaper advertising are reported, whereas magazine and radio advertising are increasing over time (Table 7). However, whether advertising is decreasing or increasing, not only varies across media types, but also across categories, as evidenced by the large standard deviations reported in Table 7.

Table 7 Summary Statistics for Advertising (in thousands US$)

	Television Advertising		Radio Advertising		Newspaper Advertising		Magazine Advertising		Total Advertising	
	Level in 2005	**Yearly growth**	**Level in 2005**	**Yearly growth ***	**Level in 2005**	**Yearly growth ***	**Level in 2005**	**Yearly growth ***	**Level in 2005**	**Yearly growth***
Average	177036	-0.012	11179	0.13	2082	-0.072	72086	0.046	262382	0.0011
Standard Deviation	153806	0.038	16833	0.18	2802	0.093	59573	0.051	208175	0.037

* We removed the short-term fluctuations (based on Equation (1)), when computing the average yearly (long-run) growth

Promotional Support. From the three promotional tools in our study, price-off promotions and feature activity are most often applied (Table 8). On average, 13.5% of the purchases made at a grocery store are bought with a price discount (based on 2005 data). 12.0% of the purchases were accompanied with feature advertising, whereas only 4.3% were bought on display. Price-off, display as well as feature show, on average, a positive yearly growth, supporting the widely-spread idea that advertising budgets have gradually shifted towards promotions in the CPG industry (e.g. Hoch et al. 2002; Lodish and Mela 2007). Still, with regard to these growth rates, considerable variability exist, as price-off promotions, display activity and feature advertising show negative average growth rates in respectively 37%, 68% and 41% of the categories in our sample.

Table 8 Summary Statistics for Promotional Support

	Price -off		Display		Feature	
	Level in 2005	**Yearly growth***	**Level in 2005**	**Yearly growth***	**Level in 2005**	**Yearly growth***
Average	0.135	0.0047	0.0431	0.00435	0.120	0.0027
Standard Deviation	0.0462	0.022	0.0177	0.13	0.0611	0.028

* We removed the short-term fluctuations (based on Equation (1)), when computing the average yearly (long-run) growth

In what follows, we separately address our five research questions. Per research question, we review the relevant literature (*Background*), discuss the applied method (*Methodology*), and end with the discussion of our findings (*Findings*).

RESEARCH QUESTION 1:
Does Private-Label Share Behave Countercyclically?

Background

Private-label share tends to increase during recessions and decrease during expansions, as has been thoroughly discussed in Lamey et al. (2007). In brief, during economic downturns consumers are expected to be more prone to buy lower-priced products (Shama 1981) (e.g. the store-brand alternatives), as consumers' ability and willingness to buy goods decreases (Katona 1975), while their price consciousness increases in such periods (Estelami et al. 2001). Likewise, the decreased national-brand support in recessions (Srinivasan et al. 2005), contrasted with retailers' practice of revamping their own labels in those bad times (Hoch 1996), have been argued to reinforce consumers' tendencies to switch to private labels.

Methodology

To quantify the cyclical sensitivity of a category's private-label share, we first extract the business-cycle component from the series. According to the literature on structural time series models (see e.g. Harvey 2006), an observed economic series, y_t, can be formulated in terms of different underlying components that have a direct interpretation: a cyclical component, y_t^c, and a trend or long-term component y_t^{LT}:[5]

$$y_t = y_t^{LT} + y_t^c . \quad (1)$$

In line with economic studies (e.g. Cook 1999; Holly and Stannett 1995), we use the Hodrick and Prescott (HP) filter (1997) to decompose each private-label-share series, PLS_t, into those fluctuations that occur at business-cycle periodicities, PLS_t^c, and the series' long-term growth pattern PLS_t^{LT}. We refer to Lamey et al. (2007) for a more in-depth discussion on the HP filter, and to Pauwels and Hanssens (2007) and Leeflang et al. (2008) for other marketing applications.

Second, a cyclical comovement elasticity is derived to measure the extent to which business-cycle fluctuations in the economy as a whole translate into cyclical fluctuations in a category's private-label share. In line with Deleersnyder et al. (2004) and Lamey et al. (2007),

[5] Remark that the average yearly growth rates reported in Table 3 to Table 8, were based on the long-term component y_t^{LT}, derived from Equation (1), for each of the series of interest.

we regress the cyclical component extracted from the private-label-share series, PLS_t^c, on the corresponding cyclical component filtered from U.S. real GDP, gdp_t^c. This results in the following equation[6]:

$$PLS_t^c = \beta^{PLS} gdp_t^c + \varepsilon_t. \quad (2)$$

For each individual product category i (i = 1, …, 92), Equation (2) is estimated, resulting in 92 individual private-label-share comovement elasticities, i.e. β_i^{PLS}, i=1…92.

When time series are log-transformed prior to filtering, both cyclical components express the percentage deviations from the respective underlying growth paths, and the resulting parameter β^{PLS} becomes an elasticity. The sign and significance of β^{PLS} indicate whether the private-label-share series, PLS_t, evolves pro-(β^{PLS}>0), counter-(β^{PLS}<0), or a-cyclical (β^{PLS}=0). Its magnitude, on the other hand, reflects the extent to which cyclical fluctuations in the general economy get attenuated or amplified in PLS_t.

Findings

Table 9 summarizes the comovement-elasticity results for both the private-label-share series and several managerial variables (which will be discussed in the next section) across all 92 product categories, along with the meta-analytic results combining evidence across all categories (based on the method of adding weighted Z's, see Rosenthal 1991).

The combined evidence across the 92 categories points out that private-label share behaves countercyclically (Table 9, meta-analytic Z-value = -3.24, p<.01), which is in line with the aggregate finding of Lamey et al. (2007). It increases during contractions and decreases during expansions. Every (temporary) 1% decrease in the economic activity results, on average, in a temporary 0.90 % increase in a category's private-label share. Or in other words, each time the economic activity falls 1% below its long-run average, the private-label share will be 0.90% larger than its expected long-run growth pattern. This lies in the same order of magnitude as the -0.96 country-level comovement elasticity reported in Lamey et al. (2007). Still, there is considerable cross-category variability, as illustrated in both Table 9 (as reflected in the large standard deviations) and Figure 1 (which illustrates the distribution of the estimated 92 elasticities). Analyzing this cross-category variation in cyclical comovement

[6] Business-cycle filters (e.g. HP filter) may induce serial correlation in the data (Engle 1974). To account for this, one can add an autoregressive error term to Equation (2). Whether or not such term is included can be determined on the basis of information criteria (Judge et al. 1988). Extending the comovement equation (2) with an AR error term also accounts for potential delayed effects of the business cycle on private-label share.

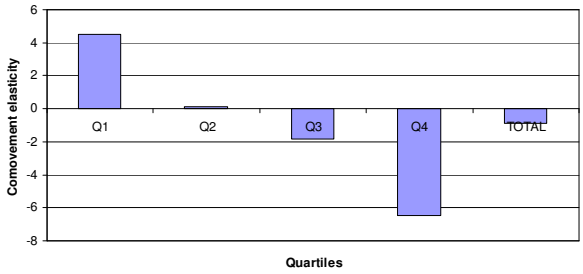
can provide us with additional insights into why consumers' buying patterns for private labels are altered in response to aggregate economic fluctuations.

Table 9 Comovement Elasticities*[7]

	Mean	(St Dev)	#Pos**	#Neg**	Meta-analysis***	Cyclicality
Private-Label Share	-0.90	(5.29)	36 (9)	56 (20)	-3.24 (.001)	*Counter*
Managerial variables						
New-Product Activity						
Innovative New Products	0.92	(10.28)	44 (10)	48 (3)	0.71 (.474)	*Pro*
Less-Innovative New Products	0.54	(5.20)	51 (24)	41 (11)	2.10 (.036)	*Pro*
Advertising Activity						
Television	0.14	(5.42)	58 (33)	34 (15)	3.38 (.001)	*Pro*
Radio	8.46	(21.76)	62 (12)	30 (7)	3.14 (.002)	*Pro*
Newspaper	3.96	(20.31)	55 (14)	37 (8)	3.25 (.001)	*Pro*
Magazines	2.78	(6.66)	69 (26)	23 (5)	5.73 (.000)	*Pro*
Promotional Activity						
Temporary Price Reductions	2.65	(2.40)	79 (8)	13 (0)	5.79 (.000)	*Pro*
Feature	-0.43	(3.97)	42 (9)	50 (20)	-2.75 (.006)	*Counter*
Display	-3.79	(6.37)	14 (0)	78 (38)	-10.13 (.000)	*Counter*

* Comovements are derived from the test Equation (2), where potential serial correlation and delayed effects are controlled for by allowing for an autoregressive term into the Equation (2). Whether or not an autoregressive error term is included, is based on the AIC. An autoregressive term was added in 27% of the series.
** Number of significant positive, respectively negative, comovement elasticities between brackets, significance at a 20% level (two-sided).
***The meta-analysis reports z-values and two-sided p-values between brackets, obtained by the method of adding weighted Z's (Rosenthal 1991).

Figure 1 Cyclical Sensitivity of Private-Label Share per Quartile



[7] The IRI Marketing Factbooks data (e.g. private-label share and promotional activity) are based on *grocery* outlets from 1985 till 1998. Starting from 1999 these data are based on *all* outlets. To control for this potential break in our data when filtering out the cyclical component, we extend the HP filter with two pulse dummies that account for a potential change in the level and the trend of the series (for further details see also Appendix A Equation (A3) in Lamey et al. (2007)).

RESEARCH QUESTION 2:

Do Marketing Managers Adjust Their Behavior in Response to the Business Cycle?

Background

Firms have been claimed to adjust their marketing strategies over different stages of the business-cycle (Mascarenhas and Aaker 1989; Shama 1993; Srinivasan et al. 2005). In times of slow demand (e.g. in a recessionary climate), they typically want to protect their short-term profits. This goal can be achieved by (i) looking for fast ways to cut costs; and/or by (ii) increasing (immediate) revenues. On the one hand, when the economy winds down, the knee-jerk reaction of most corporate executives is to tighten belts (Andras and Srinivasan 2003). Two common ways to achieve this goal are cutting advertising budgets (Picard 2001) and scaling back on innovation activity (Axarloglou 2003; Devinney 1990). Companies seem to postpone the (expensive) launching of a new product, and only launch it when demand expands (Radas and Shugan 1998), whereas a global study of Deleersnyder et al. (2008) found that advertising moves in the same direction as the general economic activity. According to current accounting rules, a drop in advertising as well as innovation expenses translates in an increase in current profits (Hanssens and Dekimpe 2008, p.2). On the other hand, companies not only reduce their budgets during recessions, they also tend to reallocate marketing funds to those activities that are more prone to generate immediate revenues, favoring promotional activities over advertising (Ang et al. 2000; De Chernatony, Knox and Chedgey 1991). This may explain why Miller (1991, p. 6) observed that "spending for trade promotion reached a record level last year (1990) as marketers adjusted their budgets because of recession".

Methodology

Similar to private-label share, the comovement elasticities for the different marketing-mix elements are derived based on Equation (2), with PLS_t^c replaced with $MM_t^{k,c}$, the cyclical component filtered from the marketing-mix element *k*.

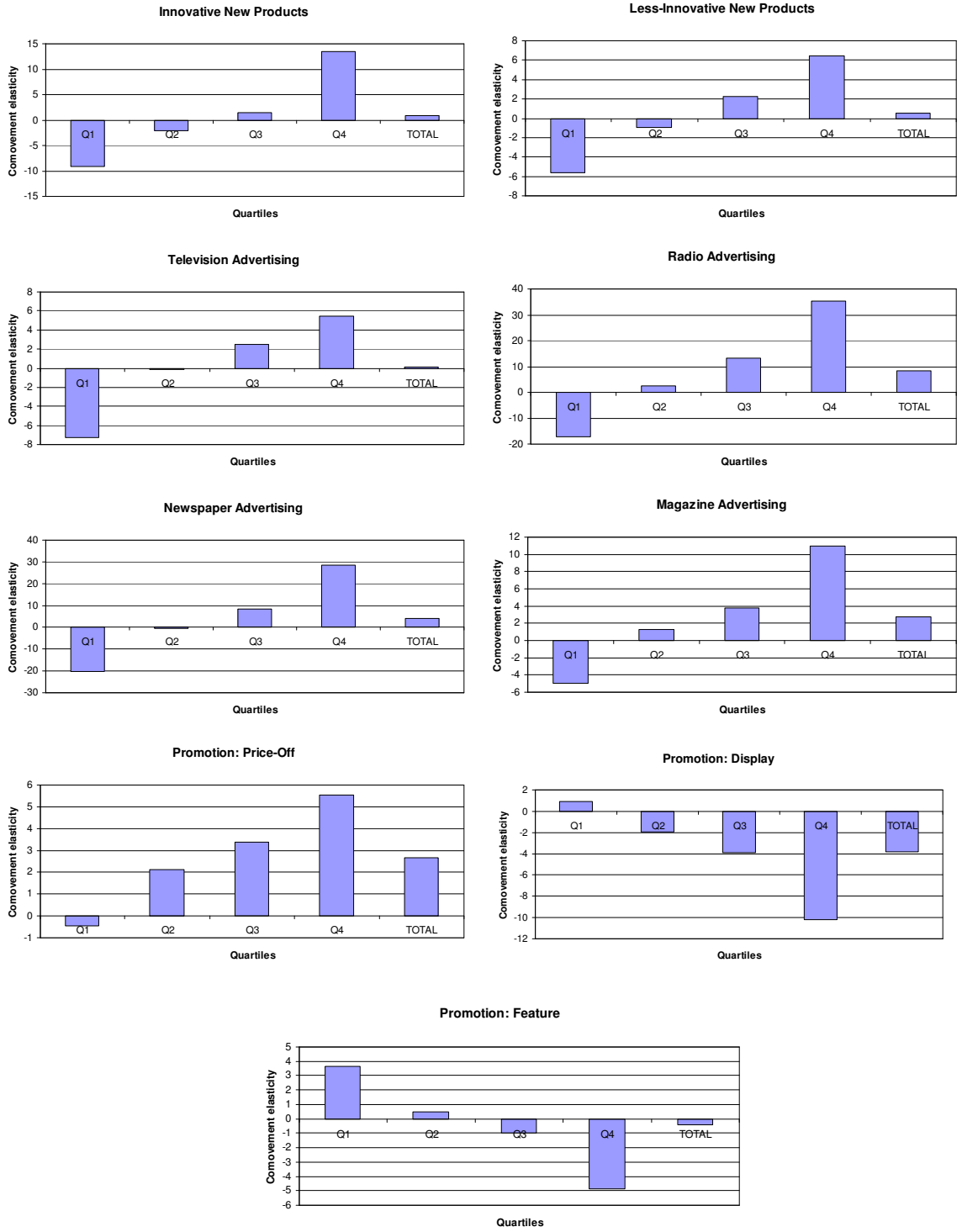
Findings

The meta-analytic results, reported in Table 9, indicate that both innovative and less-innovative new-product activity behave procyclically, confirming previous conjectures

(Axarloglou 2003; Devinney 1990). Still, on average, the procyclical behavior of innovative products fails to reach significance (meta-analytic Z-value = 0.71, $p > .10$). Our advertising results are in line with Deleersnyder et al. (2008), who also found significant procyclical advertising behavior, implying that management generally increases advertising during expansions, and decreases it during recessions. As in Deleersnyder et al. (2008), this procyclical behavior is confirmed for all four key media types, namely television, radio, newspaper and magazines. The results of a repeated- measures ANOVA indicates that radio is the most procyclical media type compared to the other three, which are regarded to be of comparable magnitude, at least on average. To the best of our knowledge, we are the first to explore empirically the relationship between promotional activity and the business cycle. Our results indicate that temporary price reductions, on aggregate, seem to behave procyclically, whereas feature and display activity show strong countercyclical behavior. The temporary-price-reduction results may seem contradictory to common expectations, as we argued that manufacturers tend to reallocate their marketing budget towards tools that generate more immediate revenues. On the other hand, marketing budgets in general are cut, which may still result in a net negative effect of a recession on the price-off promotional budget. In addition, manufacturers are loath to reduce prices in recession (Backus and Kehoe 1992), which may also help explain our procyclical finding. Nonetheless, they seem to invest more strongly in other promotional tools, like display and feature, which do not have a direct effect on the revenue per item sold.

Similar to private-label share, our comovement results indicate that there is wide variation in the comovement elasticities of the managerial variables across categories, as illustrated in Table 9 and Figure 2, which is a necessary condition to answer research questions (iii) and (iv).

Figure 2 Cyclical Sensitivity of the Marketing-Mix Instruments per Quartile



RESEARCH QUESTION 3:
Does the Cyclical Sensitivity of Managerial Behavior Contribute to the Cyclical Sensitivity of Private-Label Share?

Background

In this section, we assess whether the tendency of consumers to switch to private labels during contractions may be reinforced by the reactions of manufacturers, as suggested by Hoch (1996) and Hoch and Banerji (1993), while controlling for other category characteristics. We argue why we expect this relation for new-product activity, advertising and promotional support separately.

New-Product Activity. The slowdown of new-product activity during recessions is likely to favor the already popular private labels. Glémet and Mira (1993) and Steenkamp et al. (2005a), for example, provide evidence of a negative relationship between manufacturers' level of product innovation and private labels' market share. However, not all new products may be equally effective in fighting private labels. In general, a critical driver of new-product success is its level of innovativeness (Szymanski, Kroff and Troy 2007). The more novel the product is, the greater its relative advantage vis-à-vis existing products (Gatignon and Xuereb 1997). In our setting, only a highly distinctive innovation may help to differentiate private labels and national brands in terms of quality, making consumers more prone to buy national brands. As put forward by Steiner (2004), a true innovation leaves the category's private labels in the unfortunate position of imitating yesterday's favorites. In contrast, less-innovative products, like extensions and updates of existing products, are less likely to properly distinguish national brands and private labels, as the latter can relatively easily and quickly copy these smaller innovations. In general, Ang et al. (2000) state that business should avoid unnecessary line extensions during recessions. In sum, we presume that the impact on private-label success from cyclical fluctuations in the extent of innovative new-product introductions is more pronounced than for less-innovative introductions.

Advertising. Recent work by Deleersnyder et al. (2008) clearly indicates that aggregate advertising expenditures behave procyclically, increasing in good economic times and decreasing in bad economic times. But what does this mean for the private labels? Even though most studies on advertising found little effect in terms of sales for established products (e.g. Lodish et al. 1995; Steenkamp et al. 2005b), there is a general feeling that advertising

might be effective in limiting private-label success. For instance, Mela, Gupta and Jedidi (1998) show that decreases in national advertising spending by manufacturers affected relative brand positions by making brands more substitutable, and by reducing their brand distinctiveness. Both factors help store brands to compete more effectively with national brands. Similarly, Hoch and Banerji (1993) find that national-brand manufacturers can have an influence on the store-brand market through their advertising investments. Further support for the importance of advertising in hindering private-label success is offered by Scott-Morton and Zettelmeyer (2000), who contend that when the advertising-to-sales ratio is high, store-brand entry is discouraged. This suggests that the common practice of cutting advertising budget in recessions opens the door for store-brand alternatives.

Still, within a recessionary climate, not all types of advertising may be equally effective. Ang et al. (2000) state that during an economic crisis consumers favor advertisements that explain brand benefits, and give them reasons to select a product over competitive offerings. Image-based advertisements are relied upon less by consumers during such times. Worse, brands using such image-oriented advertisements are typically viewed as being unsympathetic towards the consumer's economic situation. Additional support for this idea is offered by Shama (1981), who contends that effective advertising to (U.S.) consumers should include more informative messages and less imagery. Furthermore, it is well known that broadcast media (television and radio) are better at communicating imagery and symbolism, but are not as effective as print (magazines and newspapers) in communicating detailed product information (e.g. Assael 1992). This suggests that print advertising is likely to be more suited during economic slowdowns to offset the stimulating effect of the contraction on private-label success.

Promotional support. Finally, during economic downturns a larger proportion of the budget is typically spent on promotions (Ang et al. 2000). In general, increased (price-oriented) promotion in a category is likely to lead to a perception that the key differentiating feature of brands is price (Sawyer and Dickson 1983). This increased relative importance of price suggests a declining importance of many of the other standard quality cues where national brands have a competitive advantage (Mela et al. 1998). An increasing focus on price emphasizes the attribute where private labels excel, and leads to higher preferences for the price-competitive private labels. Importantly, certain type of non-price oriented promotions (e.g. displays, frequent buyer programs) can be brand building or have a positive effect on brand differentiation (Blattberg and Neslin 1989), and benefit brands over time (Mela et al. 1997), without encouraging private-label encroachment.

Similarly, in our specific cyclical-sensitivity setting, we state that the role of promotion depends on the promotional vehicle considered. In line with Papatla and Krishnamurthi (1996), we distinguish three types of promotions: price-off promotions (e.g. shelf-price reduction), feature and display. First, when the economy is downturning, *price-off promotions* are likely to be well received by consumers (Ang et al. 2000; Shama 1981), as consumers have a strong tendency to economize on their expenditures during that time (Katona 1975; Shama 1981). Such promotions offer immediate and concrete gains, speaking directly to the consumers' pocket (Ang et al. 2000). Moreover, Davis, Inman and McAlister (1992) show that, in the short-run, the overall brand evaluation of the promoted brand does not decrease. Hence, these monetary promotions in recessions persuade the more economizing shopper to keep buying an otherwise higher-priced national brand without immediately devaluating the brand. It can therefore be expected that more price-off promotions during economic slowdowns put off the growing success of private labels due to a recession.

Second, we know that consumers become more inclined to acquire price information in recessions (Wakefield and Inman 1993), and become more price conscious (Estelami, Lehmann and Holden 2001). As *feature* advertising is almost always accompanied by prominent pricing information with little product information, it can be regarded as a price-oriented promotion (Mela et al. 1997). However, instead of price-off promotions, feature advertising comes not always with a true price discount (Mela et al. 1997), and thus mainly emphasizes price, which is thé competitive advantage of the private labels. Moreover, category feature activity accentuates price elasticities (Bolton 1989), which reinforces consumers' price consciousness in recessions, and consequently add to the popularity of private labels (Ailawadi et al. 2001).

Third, we classify *display* as a non-price promotion tool, as typically price is not the dominant focus of displays (see Mela et al. 1997 for a similar practice). At the category level, Bolton (1989) reports that display activity dampens price elasticities, and thus may temper the increased price sensitivity during an economic downturn. We therefore expect non-price activity to function more like advertising than as price cutting, suggesting that higher display activity in recessions corresponds to a smaller growth in private-label share.

Category Differences in Cyclical Sensitivity of Private-Label Share. Some categories are more or less prone to business-cycle fluctuations, irrespective of the adjustments managers apply to their various marketing support tools. For example, Cook (1999) shows that nondurable-goods are less cyclical than durables. Within the latter, Deleersnyder et al. (2004)

found that leisure goods were more sensitive to business-cycle fluctuations than convenience goods, while Ang et al. (2000) report that during the recent Asian crisis, the drop in consumption was less pronounced for essentials such as toiletries, food and health-care products as opposed to cosmetics.

Similarly, we expect that switching to the cheaper private-label product will be easier in some categories than in others. A first factor we consider, is a category's perceived *performance risk*. A higher level of perceived risk discourages brand switching within a category (Ang et al. 2000; Narasimhan et al. 1996). Hence, a drop in the economy should be more intense to induce switching behavior away from the national brands in categories with a higher perceived performance risk. Similarly, in categories where there is a strong perceived association between price and quality, lower-priced private labels are more likely considered to be of an inferior quality (Garretson, Fisher and Burton 2002). This results in a reluctance to switch to private labels (Batra and Sinha 2000), implying that recessions should be more severe before consumers react. We include these two variables as control variables to have a stronger test of our substantive presumptions.

Methodology

To answer the above research question, we link private-label cyclical sensitivity to the cyclical dependence of different marketing-mix elements (managerial behavior), as well as some general category characteristics, as presented in test-equation (3):

$$\hat{\beta}_i^{PLS} = \alpha + \sum_{k=1}^{K} \tau_k \hat{\beta}_i^{MM_k} + \sum_{l=1}^{L} \varphi_l X_i^l + \mu_i \ , \tag{3}$$

where $\hat{\beta}_i^{PLS}$ represents the comovement elasticity estimate of private-label share for category *i* (derived from Equation (2)), $\hat{\beta}_i^{MM_k}$ the comovement elasticity estimate of marketing-mix element *k* with *k* = 1,…,K, (derived from Equation (2) where PLS_t^c is replaced by $MM_t^{k,c}$), and X_i^l the two aforementioned category characteristics *l* with *l* = 1,2. Because the dependent variable is an estimated parameter, characterized by differing degrees of estimation accuracy, ordinary least squares (OLS) may yield biased estimates of the standard errors. We therefore use weighted least squares (WLS), with the inverse of the dependent's standard errors as weights (see Narasimhan et al. 1996; Nijs et al. 2001 for a similar approach). Even though the WLS estimation of Equation (3) will provide consistent parameter estimates, the standard errors of these parameters may still be biased. Indeed, also the comovement elasticities on the right-hand side of Equation (3) are estimated parameters, and therefore measured with error

(see Murphy and Topel 1985). Corrected standard errors are obtained by a bootstrap bias correction algorithm along the lines suggested in Nijs, Srinivasan and Pauwels (2007).

Findings

The results of Equation (3) are reported in the second column of Table 10, where the dependent variable is the private-label comovement elasticity. Note that more negative values for this elasticity correspond with a higher private-label share during recessions compared to expansions. The results in Table 10 indicate that having less innovative new products in recessions relative to expansions stimulates the countercyclical behavior of private labels, making private labels even more popular in a recession ($\tau_{INNOVNPI}$=-0.0565; p<.05).[8] However, cyclical fluctuations in the number of less-innovative new products do not influence private-label success in recessions ($\tau_{LESS-INNOVNPI}$=0.0057; p >.10). Procyclical behavior of advertising (which corresponds with cutting the advertising budget during recessions) enhances the cyclical fluctuations in private-label success, especially when this is done with more informative media types. Indeed, cutting radio ($\tau_{ADVRADIO}$=-0.0211; p <.10), newspaper ($\tau_{ADVNEWSP}$=-0.0261; p <.10) and magazine advertising ($\tau_{ADVMAGEZ}$=-0.0695; p <.10) budgets amplifies the cyclical sensitivity in private-label success, whereas television advertising is unable to influence the cyclical fluctuations in private-label share (τ_{ADVTV}=-0.0094; p >.10). With regard to promotional activity, a strong negative relationship between temporary price reductions and private-label share is found over the business cycle (τ_{TPR}=-0.2126; p <.05). Specifically, if temporary price reductions are more strongly tied during economic downturns (i.e. a larger β^{TPR}), private label-share will behave more countercyclically (i.e. a smaller β^{PLS}). The feature and display results indicate that fluctuations within those two types do not enhance or mitigate the cyclical sensitivity of private-label share ($\tau_{feature}$=-0.0713; p >.10; $\tau_{display}$=-0.0117; p >.10). Our results also indicate that private-label share in categories associated with a higher performance risk have, as expected, a less negative comovement

[8] Hence, if the comovement elasticity of innovative new products (i.e., β^{innov}) increase with 1 (i.e., every time the economic activity falls 1% below its long-run average, the number of innovative new products decreases with $(\beta^{innov}+1)$ % compared to β^{innov} %), the comovement elasticity of private-label share (i.e., β^{PLS}, which is generally negative) decreases with 0.0565. This implies that every (temporary) 1% decrease in the economic activity results, in a temporary - $(\beta^{PLS}-0.0565)$ % increase in a category's private-label share, making private labels more countercyclical.

elasticity (i.e. a higher β^{PLS}), indicating smaller increases (decreases) in private-label share during contractions (expansions) (φ_{RISK} =0.950; p <.05). However, no relation is found with the category's level of price-quality inference ($\varphi_{PRICQUAL}$ =-0.349; p >.10).

In sum, these findings indicate that managerial cyclical behavior is indeed responsible for the cyclical sensitivity of private-label share in a category, at least for the following marketing-mix instruments: innovative new-product activity, radio, newspaper and magazine advertising, and temporary price reductions.

Table 10 Private-label Success and Cyclical Fluctuations in Managerial Behavior*,[9]

	PLS Cyclical Sensitivity**		**Incremental Long-Term PLS Growth****		**Indirect Effect on the Incremental Long-Term PLS Growth (Sobel product)*****	
Intercept	0.0885	(0.08)	**0.0066**	(2.62)		
Private-Label Share Comovement			**-0.0041**	(-6.77)		
Innovative NP Comovement	**-0.0565**	(-1.43)			**0.00021**	(1.36)
Less-Innovative NP Comovement	0.0057	(0.10)			-0.00002	(-0.10)
TV Adv Comovement	-0.0094	(-0.16)			0.00004	(0.16)
Radio Adv Comovement	**-0.0211**	(-1.98)			**0.00008**	(1.83)
Newspaper Adv Comovement	**-0.0261**	(-1.80)			**0.00010**	(1.68)
Magazine Adv Comovement	**-0.0695**	(-1.49)			**0.00026**	(1.42)
TPR Comovement	**-0.2126**	(-1.91)			**0.00080**	(1.78)
Feature Comovement	-0.0713	(-0.68)			0.00027	(0.66)
Display Comovement	0.0117	(0.16)			-0.00004	(-0.15)
Performance Risk	**0.9500**	(1.57)	-0.0025	(-0.75)	**-0.00357**	(-1.48)
Price-Quality Inference	-0.6488	(-1.07)	0.0019	(0.56)	0.00244	(1.04)
R²	20.13%		30.17%			
Max VIF	1.17		1.18			

* Parameter estimates are indicated in bold when the one-sided p-value < .10.
**t-values based on the bootstrap corrected standard errors are reported between brackets.
***z-values based on the Aroian (1944) test are reported between brackets.

RESEARCH QUESTION 4:

Does a Recession Have a Long-Lasting Impact on Private-Label Success?

Background

Lamey et al. (2007) have shown that part of the boost in a country's private-label success during recessions is not cancelled out in the subsequent expansions. Hence, consumers are not only prone to buy private labels during economic downturns; legions of consumers are also no

[9] In unreported analyses we controlled for the level of private-label share at the start of our dataset as a possible category control variable. As associated parameter estimates where never close to significance (t-values less than 0.5 in absolute values), we dropped this control variable from the model.

longer willing to switch back to manufacturers' brands during economic upturns (Wall Street Journal 1993). From their actual product experience, consumers may learn that true private-label quality exceeds prior perceptions (Richardson, Dick and Jain 1994). In this regard, Ailawadi and Keller (2004) alert that if consumers update their quality perceptions (e.g. through direct consumption experience in a recession), store brands will gain more customers, and it will be difficult for manufacturers to win them back.

Methodology

The cyclical comovement elasticity of private-label share does not yet answer the question whether the severity of the cyclical fluctuations influences the underlying trend or growth pattern in the series. In fact, the comovement elasticity, β^{PLS}, quantifies the relationship between temporary (cyclical) fluctuations in, respectively, private-label share and the economic activity, after the long-run trend has been removed from the series. To formally assess whether cyclical shocks, and more specifically recessionary shocks, affect private labels' long-term growth, we consider the growth rate of the underlying long-run component, and see whether this growth is amplified when a recession occurs (see Kontolemis 1997 for a similar approach):

$$\Delta PLS_t^{LT} = \delta + \phi dum\_recession_t + \mu_t, \quad (4)$$

where PLS_t^{LT} is the non-cyclical part obtained by filtering (see Equation (1)), and ΔPLS_t^{LT} the long-run growth in the private-label series.[10] The recession dummy, $dum\_recession_t$, is set to one when the economy is downturning ($\Delta gdp_t^c \leq 0$), and zero when the economy is expanding ($\Delta gdp_t^c > 0$). The parameter δ reflects the average long-term growth in private-label share when the economy is booming, whereas $\delta + \phi$ measures the average long-term growth in private-label share when the economy is downturning. Hence, the parameter ϕ quantifies the average incremental long-term growth in private-label share in a recession *that is not cancelled out by the subsequent expansion period*. When $\phi > 0$, this implies that, on average, increases in private-label share during recessions are not entirely compensated for in

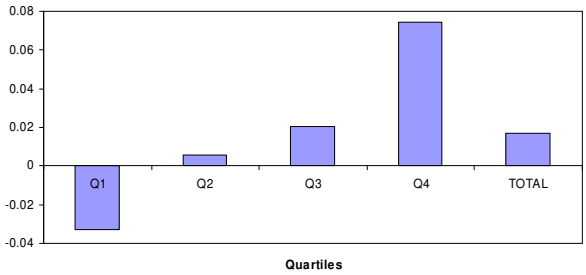
[10] Starting from the year 1999, private-label share information is no longer based on grocery outlet but on all outlets. To control for this break, we added a pulse dummy into Equation (4) to control for a possible level shift. Note that we also explored whether we need to include a step dummy in Equation (4). Still, these step-dummies turned out to be insignificant in practically all categories (p >0.10). Moreover, a pooled model across our categories confirmed that there was no permanent level shift in the growth rates.

the subsequent expansions, resulting in long-lasting impact from a recession on private-label success.[11]

Findings

Across our 92 categories, a positive growth in private-label share is found during expansions as well as contractions. On average, private-label share grows yearly with 2.82% in expansion periods (Mean = 0.028, St Dev = 0.048), as derived from the intercept in Equation (11). A meta-analytic test reports a strong positive effect for this common average long-term growth (meta-analytic Z-value = 12.31, p <.01). Moreover, there is combined evidence that recessions have an *incremental* positive effect on the long-term growth in private-label share (meta-analytic Z-value = 5.56, p <.01) (Mean = 0.017, St Dev = 0.047). In fact, in 73% (67 out of the 92) of the categories, a positive incremental long-term growth is detected. This implies that a recession has a long-lasting effect on private-label share, supporting the findings of Lamey et al. (2007). On average, private-label share grows with 4.52% (i.e., 2.82% + 1.70%) in recessionary years.[12] However, there is once more considerable variation across categories as illustrated in Figure 3. Hence, a further investigation is called for, to determine which factors are responsible for this variation in the incremental long-term private-label-share growth in a recessionary climate.

Figure 3 Incremental Recession Growth in Private-Label Share per Quartile



[11] Note that we focus on the incremental growth induced by recessions, ϕ, instead of the average long-term growth $\overline{\Delta PLS^{LT}}$. According to the findings in Lamey et al. (2007), business-cycle induced growth is the result of a stimulating effect of a recession that is not completely cancelled out in the subsequent expansions. The business cycle affects private-label long-term success only permanently during recessions and not during expansions. Hence, the relationship between the cyclical behavior of managers and private-label success might be blurred when looking at the average growth as it captures both growth in recessionary and expansionary periods which is due to a number of extra (unmeasured) factors (i.e. increasing concentration in the retailer sector, retailers' increasing effort in their own labels,…).

[12] The reported growth figures are expressed in relative terms. For example, if the current private-label share is 20%, a growth rate of 2.82% in expansions implies an absolute increase of 0.56% to 20.56%, whereas a growth rate of 4.52% (i.e., 2.82%+ 1.70%) in recessions implies an absolute increase of 0.90% to 20.90%.

RESEARCH QUESTION 5:

Do the Cyclical Sensitivity of Private-Label Share Itself and the Cyclical Sensitivity of Managerial Behavior Contribute to the Long-Lasting Impact of a Recession on Private-Label Success?

Background

In economics, business-cycle volatility has been found to affect the average long-term growth in output across countries (e.g Döpke 2004; Mills 2000; Ramey and Ramey 1995). In other words, the magnitude of the cyclical fluctuations in output may also be related to its long-term underlying growth. In a similar vein, we wonder whether more extensive cyclical fluctuations in private-label share cause a larger permanent "scar" of the recessions on national-brand performance.

In addition, we explore whether cyclical managerial behavior is not only responsible for consumers to switch to private labels during recessions, but whether it also translates in overall permanent private-label growth. In their global advertising study across 37 countries, Deleersnyder et al. (2008) found that in countries where advertising was more cyclical, the long-run growth in private-label share was stronger. We are not aware of comparable studies that looked at the impact of the other marketing-mix instruments. Still, to successfully overcome a recession, earlier studies already stressed a firm's dual objective of: (i) securing firm's position *during* the recession, and (ii) achieving a sustainable (or superior) position in the *subsequent* periods (Frankenberger and Graham 2003; Hillier and Baxter 2001). This suggests that the various strategic options (and thus also the cyclical fluctuations in the other marketing-mix instruments) pursued by firms during recessions could impact both.

Methodology

In Equation (5), we explore across our 92 categories whether the magnitude of the comovement elasticity $\hat{\beta}_i^{PLS}$ (derived from Equation (2)) is linked to the incremental growth in private-label share due to a recession, $\hat{\phi}_i$ (derived from Equation (4)):

$$\hat{\phi}_i = \alpha + \gamma_{PLS}\hat{\beta}_i^{PLS} + \sum_{l=1}^{L}\varphi_l X_i^l + \mu_i \ . \tag{5}$$

We are mainly interested in the γ_{PLS} parameter; however, we again control for the aforementioned covariates. Under the assumption that countercyclical private-label behavior

(i.e. β_i^{PLS} <0) stimulates incremental long-term private-label growth linked to a recession, we expect γ_{PLS} to be <0. As both the dependent and some independent variables are once more estimated parameters, we use WLS estimation, and obtain bootstrap-corrected standard errors following the algorithm advocated in Nijs et al. (2007).

To investigate whether managerial cyclical behavior has additional explanatory power beyond its impact on private-label-share cyclical sensitivity, we can extend Equation (5) with the comovement elasticities derived for the various marketing mix tools, $\hat{\beta}_i^{MM_k}$:

$$\hat{\phi}_i = \alpha^* + \gamma_{PLS}^* \hat{\beta}_i^{PLS} + \sum_{k=1}^{K} \gamma_k^* \hat{\beta}_i^{MM_k} + \sum_{l=1}^{L} \varphi_l^* X_i^l + \mu_i^* . \quad (6)$$

Such an incremental effect of managerial practice is found, if a joint test on the marketing mix parameters γ_k^*, testing the hypothesis $\gamma_1^* = \gamma_2^* = ... = \gamma_K^* = 0$, can be rejected. In that case, the impact of managers' cyclical support behavior has a *direct* effect on the incremental long-term private-label-share growth in a recession. Moreover, management's cyclical marketing activities can also have an *indirect* effect, through their impact on the intervening private-label comovement elasticity. To formally quantify this indirect effect, we compute the Sobel (1982) product $\gamma_{PLS}^* * \tau_k$ $(=\sigma_k)$ for each marketing-mix element *k* (with τ_k taken from Equation (3)). The test-statistic of these products can be derived through the following Aroian (1944) test equation: $\frac{\gamma_{PLS}^* * \tau_k}{\sqrt{(\gamma_{PLS}^*)^2 * (SE_{\tau_k})^2 + (\tau_k)^2 * (SE_{\gamma_{PLS}^*})^2 + (SE_{\tau_k})^2 * (SE_{\gamma_{PLS}^*})^2}}$,

where *SE* refers to the standard error of the estimate.[13] Under the assumption that stronger procyclical behavior, or less countercyclical behavior, in marketing-mix instrument *k* (i.e. larger $\beta_i^{MM_k}$) exacerbates the incremental long-term private-label growth indirectly through the latter's comovement elasticity (γ_{PLS}^* <0), we expect that the Sobel product is positive; thus we expect that σ_k >0 (i.e., we expect that τ_k <0 and γ_{PLS}^* <0).

Findings

The results of Equation (5) indicate that the cyclical sensitivity of private-label share is strongly linked with the incremental growth during a recession, as reported in the third

[13] We note that there are three principal versions of the "Sobel test" - one that adds the third denominator term (Aroian 1944) as outlined above, one that subtracts it (Goodman 1960), and one that does not include it at all (Sobel 1982). We opted to use the Aroian test which has been suggested by Baron and Kenny (1986). The latter performs (together with the Sobel test) best in a Monte Carlo study (MacKinnon, Warsi and Dwyer 1995), and converges closely with sample sizes greater than 50.

column of Table 10 ($\gamma_{PLS} = -0.0041; p < .01$), i.e. the stronger the (temporary) countercyclical fluctuations in private-label share, the higher the permanent increase in private-label success.[14]

According to a joint *F*-test (F(9,79) = 0.95; $p > .10$), including the managerial cyclical activities in Equation (6) does not have any additional explanatory power over the private-label-share comovement variable, which excludes a *direct* link of managerial actions on private-label long-term success. Nonetheless, the Sobel (1982) product reveals that managerial cyclical behavior does have an *indirect* effect on the incremental growth in private-label share in a recession, i.e. through its impact on the cyclical sensitivity of private-label share. These indirect effects are in line with our previous findings, i.e. the cyclical sensitivity of innovative new products, radio, newspaper and magazine advertising as well as temporary price reductions are significantly related to the long-lasting effect of a recession on private-label share, whereas less-innovative new product activities ($\sigma_{LESS-INNOVNPI}$ =-0.00002; $p > .10$) and feature (σ_{FEAT} =0.0003; $p > .10$) and display activity ($\sigma_{DISPLAY}$ =-0.00004.; $p > .10$) remain unrelated. In particular, the cyclical sensitivity of innovative new products adds to the cyclical sensitivity of private-label share ($\tau_{INNOVNPI}$ =-0.0565; $p < .05$) (see Equation (3)), which in turn contributes to the long-term growth in private-label share (γ^{*}_{PLS} =-0.0038; $p < .01$) (see Equation (6)). In combination, this results in an *indirect* positive effect of innovative-new-product cyclical sensitivity on incremental private-label-share growth in a recession ($\sigma_{INNOVNPI} = \tau_{INNOVNPI} * \gamma^{*}_{PLS}$ =0.00021; $p < .10$).[15] Similarly, our results suggest that relatively less radio ($\sigma_{ADVRADIO}$ =0.0001; $p < .05$), newspaper ($\sigma_{ADVNEWSP}$ =0.0001; $p < .05$) and/or magazine advertising ($\sigma_{ADVMAGEZ}$ =0.0003; $p < .10$) in recessions compared to expansions, adds to the long-term private-label growth linked to the recession. Finally, a higher temporary-price-reduction comovement intensifies the incremental long-term growth (σ_{TPR} =0.0008; $p < .05$). With respect to the control variables at the category level, namely performance risk and price-quality inference, again a significant (positive) indirect effect of performance risk on private-label success in recessions is found ($\gamma_{PLS} * \varphi^{*}_{RISK}$ =-0.0036; p

[14] If private-label share comovement elasticity decreases with 1 (i.e., $\beta^{PLS} - 1$), and thus becomes more countercyclically, the incremental growth in private-label share due to a recession increases with 0.41% (i.e., ϕ + 0.0041).

[15] If the comovement elasticity of innovative new products (i.e., β^{innov}) increase with 1, the incremental growth in private-label share due to a recession increases with 0.021% (i.e., ϕ + 0.00021).

<.10) , whereas price-quality inference turns out be insignificant ($\gamma_{PLS} * \varphi^{*}_{PRICQUAL}$=0.0024; p >10).[16]

In sum, these findings indicate that private-label success in the long-run is indeed linked to how managers respond to fluctuations in the economy. Managerial cyclical sensitivity is responsible for private-label cyclical sensitivity in a category, which in turn explains the incremental growth in private-label share. This means that managerial cyclical fluctuations explain those *temporary* cyclical fluctuations in private-label share, but, more interestingly, also indirectly are related to a *long-lasting* boost in private-label share.

DISCUSSION

In this study, we examined the sensitivity of private-label share to the aggregate business cycle for several product categories in the United States, and studied whether managerial adjustments, in response to the economic fluctuations, actually contribute to this sensitivity. Our findings were structured along five dimensions:

(i) A category's private-label share behaves countercyclically, as it increases in recessions and decreases in expansions.

(ii) Managers adjust their behavior in correspondence with the business cycle.
   a. Less-innovative new products and, to a lesser extent, innovative new products behave procyclically;
   b. Advertising expenditures in all four media types that we considered (television, radio, newspapers and magazines) exhibit procyclical behavior;
   c. In terms of promotional activity, feature and display show the expected countercyclical behavior, while procyclical patterns are observed for temporary price cuts.

(iii) These cyclical adjustments in marketing support are associated with cyclical fluctuations in a category's private-label share.

(iv) A category's private-label share increases not only within a recession, but part of this success remains beyond the recession, resulting in a permanent boost in private-label share.

[16] To be sure these findings are not cancelled out in expansion periods, we redid our analysis on the δ parameter in Equation (11), and thus check whether this parameter is related to the same drivers as our focal variable, the ϕ parameter in Equation (11), but in the opposite direction. Nonetheless, the cyclical comovement elasticity of private-label share as well as the managerial comovement elasticities turn out to be unrelated with the average long-term growth in private-label share during expansions.

(v) The permanent boost in private-label success due to a recession is linked to its own cyclical sensitivity and the cyclical sensitivity of managerial behavior.
    a. Stronger countercyclical behavior in a category's private-label share results in a higher incremental long-term growth due to a recession, and
    b. Current managerial practice in response to the economic activity is indirectly related to the long-lasting boost in private-label share, through the effect on the latter's comovement elasticity.

A key insight from our study is therefore that the apparently widespread practice of reducing brand support during bad economic times reinforces the impact of the business cycle in favor of store-brand alternatives.

Managerial Implications

Our study has a number of suggestions for managers aiming to mitigate the continuing growth of private-label sales, or more specific, aiming to diminish the stimulating effect of a recession on private-label success. In our model, we explore several controllable marketing variables through which private-label success can be influenced – innovative and less-innovative new-product activity, advertising expenditures (television, radio, newspapers and magazines), and promotional activity (temporary price reductions, feature and display).

New-Product Activity. Our findings indicate that one could offset the increased popularity of store brands both during and beyond the recessions when more innovative new products are introduced in such periods. Less-innovative new products, on the other hand, are not helpful in downweighing this private-label success. Hence, during economic downturns, national-brand manufacturers should not focus their attention on incremental innovations, but rather try to come up with truly innovative new products. This enables them to limit not only the extent of private-label success during the recession itself, but also to curb the latter's long-run growth long after the recession is over. Nonetheless, the number of new-product introductions is currently subject to business-cycle fluctuations, as introductions are generally postponed till more affluent times.

Advertising Expenditures. Although advertising's effect on sales is generally acknowledged to be small (Hanssens, Parsons and Schultz 2001), it plays a vital role in preventing consumers to buy private labels during recessionary times. Advertising provides product information about the national brands' unique qualities, and helps to justify the price premium. As such, the overall observed procyclical behavior of advertising discourages

consumers to keep paying for the higher priced national brands. Besides consumers are looking for more informative advertising (Ang et al. 2000; Shama 1981) during recessions, which is confirmed by the fact that radio, newspapers and magazines seem to be more impactful than television advertising, the imaginary media type par excellence. In other words, consumers are more susceptible to informative advertising rather than imagery advertising in recessionary periods, which calls for a stronger focus on more informative media types. Hence, managers should avoid cutting their advertising budget, especially their radio, newspaper and magazine budgets, in recessionary climates.

Promotional Support. The growing focus on price promotions stimulates price sensitivity (Mela et al. 1997), and decreases brand distinctiveness (Mela et al. 1998) in the long run, which enhance private-label popularity (e.g. Ailawadi, Neslin and Gedenk 2001) among others. In contrast to the general warning against this increasing focus on price promotions, countercyclical behavior with regard to price promotions attenuates the popularity of private labels during and beyond recessions. Put differently, it might not by wise to *permanently* increase one's price-promotional activity. During a recession a *temporary* boost in one's activity may help in the fight against the store-brand alternatives. More price promotions during recessions convince the national-brand buyers to stick to the national brands over the store-brand alternatives during these hard times, which also mitigates the general growth in private-label share. Nonetheless, in contrast to the general belief, that the extent of (price-) promotional activity is enlarged in recessionary climates, our results reveal a procyclical pattern. This supports the idea that manufacturers are loath to reduce their prices during recessions. Moreover, managers may perhaps avoid price reductions in the store, because of their uncertain, modest pass-trough. Even so, other promotional tools, like feature and display, show the clear countercyclical pattern, as its budgets are clearly put up when the economy is downturning. Those fluctuations, however, were unrelated to the boost in store-brand sales.

Hence, brand manufacturers need to work hard to avoid the drop in their brand support when the economy winds down. Their current practice during bad economic times strengthens the ongoing success of private labels. Within recessions, consumers have an extra incentive to search for lower priced products with adequate quality, characteristics where store brands excel. To prevent consumers to try the private labels, which comes with a risk of permanently loosing one's customers, national-brand managers should invest more strongly in marketing activities during downturns. Moreover, irrespective of private labels, this strategy has been

found to result in improved general performance in the recession itself, but also afterwards (Srinivasan, Rangaswamy and Lilien 2005). For example, Frankenberger and Graham (2003) report that firms who increase their advertising expenditure in a recessionary period, created added value that extended through the years following the recession. Similarly, Hillier and Baxter (2001) have shown that firms which increase their product development spending during a recession perform better in terms of profitability and market share during the subsequent recovery.

Limitations and Directions for Further Research

Our study has several limitations that offer interesting avenues for further research. First, even though, we do not have retailer information at our disposal, it would be better to control for retailers' behavior in accordance with the business cycle when testing our presumptions. In addition, while we find that several marketing-mix elements on the part of the national brands are able to lessen the popularity of their store-brand alternatives, their ability to do so may differ between categories and even, within one category, between different national brands. Private-label success (in recessions) might rely more on managerial conduct in some categories than in others. For instance, one can expect that categories where objective quality differences between national brands and private labels are at a minimum (f.e. water, milk, …), advertising will naturally be less effective in justifying the price difference. Moreover, within one category, some national brands may reduce their brand support more than others when the economy winds down, whereas some brand players might be more effective in the fight against private labels than others in such times. Further research should investigate the extent and the drivers of cross-brand differences in both managerial cyclical sensitivity and the ability to curb private-label popularity in recessions. Do market leaders react differently to economic swings than small brands? And, are market leaders better positioned, compared to small players, to fight private labels in recessions?

In addition, our findings are based on U.S. data. In the private-label landscape, the U.S. can be considered in between, as its private-label growth can be attributed both to the increasing success of hard discounters (pioneered in Germany), and to the growing importance of elaborate, quality-oriented, private label programs by mainstream retailers (pioneered in the U.K.). Nevertheless, the U.S. has, for example, the largest advertising market by far. Moreover, Deleersnyder et al. (2008) conclude that U.S. advertisers are one of the most responsive to business cycle ups and downs compared to the other 36 countries in their sample. Hence, future research should explore whether our findings are generalizable

across countries, and what factors underlie the cross-national variation (if any). For instance, one could argue that in countries that are scoring higher on the uncertainty avoidance dimension of Hofstede (2001), the drop in the economy should be more severe to convince consumers to try the 'risky' private labels. Moreover, advertising expenditure has been found to behave more cyclically in countries high on uncertainty avoidance (Deleersnyder et al. 2008). Hence, national culture might mitigate or exacerbate our findings.

Moreover, we find that several media types curb the loss in market share. Though more research is needed on the true content of advertising, expecting informative advertising to do a better job than imaginary advertising, at least when the economy winds down. Moreover, we limited the considered advertising instruments to four key media. Information on new advertising media such as the internet is not included, as time series of sufficient length are currently not available. Future research should assess whether or not online advertising is better able to resist severe economic downswings than the established media, and whether cyclical swings in internet budgets are related to private-label popularity in recessions. Here, one could expect that the internet will be a preferred media type in recessions, as it (mostly) gives more detailed information than the other classic media types.

Finally, the available price-promotional information used in this study, as also used in Hoch et al. (2002) and Fader and Lodish (1990), reflects the percentage of the volume bought on a price discount. More direct measures on the frequency and depth of the promotions offered by manufacturers might give us more direct insights in the relative value of both components.

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